Asset Management for Green Infrastructure

Case study title: Auckland Bus Shelters: A Step Towards a Greener Network

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Auckland Transport (AT) is the road controlling authority overseeing all transportation services within the Auckland region, excluding state highways. AT's responsibilities encompass over 8,000 kilometers of roads, more than 2,500 bus shelters, footpaths, cycling infrastructure, parking facilities, and public transport systems. Through the creation of green corridors within the roading network, AT is keen to implement green infrastructure to improve stormwater management, water purification, airborne pollutant filtration, habitat pathways and biodiversity, and climate resilience.

In 2021-2022, AT trialled retrofitting living roofs and walls on two existing bus shelter sites. The Panmure Interchange bus shelter included a 194m² living roof and four wall eco-panels (1m x 2m) irrigated by a Bluetooth-controlled system via mains water. This system supports over 1,000 plants in eco-pillows provided by Natural Habitats, with access for maintenance facilitated by a scissor lift. The Diorella Drive bus shelter featured a 9.5m² living roof with integrated solar panels, climbing plants grown up a wired system from a planter box and irrigation by roof runoff collected in a seat tank and water pump, using 10 eco-pillows from Natural Habitats.

These two living roofs on shelters provided key insights: structural loading of 100kg/m² required; vandalism impacted the wall plants; irrigation needs were higher than anticipated; local community involvement was crucial for maintenance at Diorella and easy maintenance and access are important.

In 2024, AT trialled a new light weight design (60kg/m²), Sempergreen Click’n go roofing trays by Greenroofs Ltd., on 13 bus shelters across the AT road corridor.

The new design concept offered a cost-effective lightweight installation method, reducing the load on shelter roofs, with no irrigation system required. The updated design and plant selection also required less maintenance through the use of a shallow growing medium and drought resilient sedums. The Click’n go roofing tray design will be monitored to determine its feasibility for broader implementation across the network. The evaluation will focus on plant survival rates over a year (to account for seasonal variations) and maintenance needs, using the existing shelter at Panmure Interchange as a reference point.

Figure 1: a) Panmure Green Roof eco pillows, b) Diorella Drive roof with solar panels (Images courtesy of Auckland Transport) and c) Sempergreen Click’n go trays (Image courtesy of Greenroofs Ltd)